

RAVALLI NWR  
NARRATIVE REPORT - 1967

RAVALLI NATIONAL WILDLIFE REFUGE

Stevensville, Montana

NARRATIVE REPORT

1967

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# RAVALLI NATIONAL WILDLIFE REFUGE

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## I. GENERAL

### A. Weather Conditions

In brief: Extremely heavy late winter snow pack. An early spring causing flood conditions. A dry summer within degrees of a drouth condition. A normal, beautiful fall and early, normal winter conditions. This would be a highlight summary of our four seasons.

Each season had its advantages and disadvantages. But considering our objective of wildlife management, no hardships were sustained. The only major concerns were the problems evolved by spring flooding. That problem is discussed in detail under other portions of this report and is depicted in the report's photo section.

The year's weather summary data is given below:

<u>T e m p e r a t u r e s</u> : Precip- :					Remarks
Month :	High :	Low :	Ave. :	itation : Totals :	
Jan.	: 47	: 2	: 31.6	: 2.11	: Precip. 1.04 above normal
Feb.	: 62	: 12	: 34.9	: 1.01	: " .01 " "
Mar.	: 57	: 4	: 34.6	: 1.13	: " .30 " "
April	: 61	: 17	: 40.3	: 1.03	: " .25 " "
May	: 85	: 23	: 51.1	: 1.26	: " - .26 below normal
June	: 87	: 37	: 59.3	: 2.41	: " .68 above normal
July	: 97	: 39	: 67.8	: .37	: " - .56 below normal
Aug.	: 97	: 36	: 67.6	: --	: " - .69 " "
Sept.	: 98	: 31	: 60.3	: .63	: " - .29 " "
Oct.	: 69	: 23	: 45.3	: 2.17	: " 1.23 above normal
Nov.	: 62	: - 4	: 32.6	: .62	: " - .48 below normal
Dec.	: 47	: - 5	: 23.8	: 1.62	: More snow than usual

### B. Habitat Conditions

#### 1. Water

Much of the abnormally heavy snow pack of late last winter remained on the mountains around the valley until late June. This allowed ample run-off waters to keep creeks and the river well charged for much of the season.



Flowing water was really no problem this year. However, dry land farming and non irrigated pasture activities, valley-wide, suffered during the late growing season due to lack of rains. Really nothing too unusual though. This is one of the gambles of this agricultural area. For average annual total precipitation is only 14 inches.

Three main water sources are conveyed through the refuge: Bitter-root River waters are carried through the Association supply ditch to serve three tracts on the refuge. River water diverted at another source serves two further tracts and the warm waters of Slough Creek that originate on the refuge flow the length of the project. Wherever provisions were made to convey and utilize our water, our activities were normal.

Four new ponds were constructed on the refuge in the fall of 1966. Ample water was received to maintain them to full capacity the entire year. Also a new pond, dike No. 5, constructed in September, was filled to initial maintenance level within a few days after its completion.

In summary, water was ample for most of our wildlife activities during the entire calendar year.

## 2. Food and Cover

Aquatic food plant production was rated as good on all our wet land habitat. Water temperature and pH are ideal in this locality for good aquatic plant growth and reproduction.

The four new ponds constructed last year are beginning to show signs of aquatic plant communities being established already. Hard stem bullrush, watercress, Lemna, and Sago pond weed are starting to naturally reestablish themselves. Some aquatic and emergent root stocks were left on the area when the ponds were constructed. But probably a moderate amount of seed source has been conveyed in by the Supply Ditch and the South Drain water sources.

Profuse green algae blooms were noted on the four new ponds during August. The growth was evidently not dense enough to cause any abnormal problems. We do not know if this bloom will be a common midsummer occurrence on the new ponds or if this year's happening was due to the extremely warm air temperatures.

Good bird nesting cover was had on all the area except by the new ponds constructed in the fall of 1966. Those ponds, of course, had relatively vegetative-free peripheries during the beginning of the year. However, by the end of the growing season, they began to vegetate naturally quite well. And should serve as good bird nesting and escape cover this coming spring.

Seed and berry crops were rated as fair to good this year. There should be ample sources of these foods for those forms of wildlife requiring them all winter.

In summary, we would classify our food cover for wildlife requirements as very good this entire year.

## PART II. WILDLIFE

### A. Migratory Birds

Ducks. Warm water sloughs of the refuge support a wintering population of waterfowl, primarily mallards. In comparison, during the January to April period of 1965 we had a total use days for ducks of about 30,000. During that same period in 1966, total use days increased to 86,000. During this year, for that same period, our total days was 445,564. This is a remarkable increase. One that verifies the proportionate value of this new refuge to construction accomplishments. For each year since our establishment more ponds have been constructed or rehabilitated. Many served by warm water.

Duck production has increased slightly this past year also. In 1965 production was 165 ducks. Last year it was 780, and this year 990. Nothing spectacular, of course, but the increase does illustrate added use and values of restoration and development to date.

We have been incorporating small nesting islands (earth pushups) on all new ponds that we develop. It takes one growing season, of course, for these new islands to vegetate. But it appears that these nesting areas and territories are related to our increased nesting production.

Ducks utilizing the refuge for the September to December period were down slightly from a year ago due to severe prolonged freezing weather. We had 317,905 duck days use for this year, or about 100,000 less than a year ago. This limited open water on the refuge was further reflected in the totals of peak number of birds: Last year we had 6,000 (mainly mallards) for the fall period. This fall the number was about 4,000.

Mallards are, and probably always will be, the "duck" of this refuge. But we do receive some limited use by almost all of the duck species common to this flyway.

It was interesting to note that ruddy ducks were relatively common during early fall a year ago (first records for the valley). About 500 birds used the area during that September. This year they stopped here on migration again, but only a few hundred.

Geese. Goose use and production has increased slightly this year from the past. Currently we are talking in terms of only a few dozen geese when referring to this refuge. But indications thus far make us optimistic that proportionate increases can be expected from continued future development programs.

Two pairs of Canada geese have nested on the artificial islands constructed on ponds 2 and 3. This in itself gives us encouragement to build more of these nesting islands when we develop new water impoundments.

Several small groups of snow geese were frequently observed on the refuge during April and March. Peak number was 50 birds.

A Ross' goose population built up on the refuge during the latter part of April and a group of 130 to 150 remained on the refuge till the middle of May. This population presented quite a treat for the University of Montana ornithology class. The class made several field trip visits to the refuge in May and had an excellent opportunity to view the Ross' geese.

Swan. Peak whistling swan use on the area was during March when 150 birds were using the area. Their refuge preference was for pond 2, constructed just last year.

Many of the swans would trade back and forth over the town of Stevensville during certain days. Their display made an impressive view to most of the townspeople. We took a few pictures of the swan and wrote a brief article on the life history of the species for the local newspaper. It was hoped that this feature article would acquaint the local people more thoroughly with the life habits of this unusual migrating waterfowl.

Shorebirds. We received a large assortment of migrating shorebirds this spring. The attraction was the clean, open periphery of the new ponds recently constructed. Summer residents and nesting shorebirds were about what they have been the past several years. Nothing spectacular in volume but interesting in variety. Fall concentration buildups were noted from the end of August through most of September. Nothing unusual or of great proportions was noted this year.

Doves. Mourning doves arrived on the area in April. About 20 pairs of nesting birds used the area during the season. Peak refuge build up of about 200 birds was seen during the end of September. A few birds were still on the area as late as the beginning of November, just prior to the winter freeze up.

Great Blue Heron. Details and comments of the refuge's Great blue heron rookery was given on page five of last year's Narrative Report. The statistics and information mentioned there still apply. No changes have been noted.

## B. Upland Game Birds

About fifty ring-necked pheasants used the refuge last winter and early spring. Four broods were actually observed this year. Estimated total of young produced, about twenty.

The State Fish and Game Department released thirty hatchery surplus hens on the refuge at the end of July. It appeared that these unbred birds were released far too late in the breeding season to accomplish any nesting.

Also, the State Fish and Game released about 100 roosters and 50 hens on the public hunting area during mid September. Many of the birds from that release moved along the river bottom and on to private lands.

Relatively good pheasant use was noted towards the close of the period on the east portions of tracts 11 and 20. This is an area of much rank vegetation and ample feed, and is on a closed hunting area. Possibly we can naturally establish a nucleus breeding population there. It will be interesting to watch and observe. Pheasant populations, valley-wise, are at an extremely low ebb. The limiting factor being generally blamed on lack of rank cover and proper habitat. We have these requirements on the tracts mentioned, as well as protection.

## C. Big Game Animals

No appreciable change in the white-tailed deer population using the refuge this year. It is estimated that we have about ten animals. Reproduction was estimated at about four fawns.

No serious effects of marauding dog packs from Stevensville along the river bottoms were noted during this past year. This past harrassment had a tendency to relocate and disturb deer as well as other forms of wildlife along the river bottom. And to cause predation problems.

Black bear were scarce throughout the valley bottom, as compared to last summer. One was seen on the refuge this fall. Probably just a transient crossing the valley floor.

## D. Fur Animals, Predators, Rodents and Other Mammals

A few muskrats are seen on all our ponds, waterways or marshes. Their population is relatively limited. We could support ten times of what we do have, for marsh management. It was interesting to

note that several pairs took residency this spring in the ponds built in 1966. Cattail control on those ponds could be a problem in the future. An ample muskrat population there will help us to accomplish that vegetation control.

Nothing unusual to report on beaver for the entire year. There was a pair that used the refuge early last spring. But those animals evidently either died or moved off the area.

Surprisingly, red fox and striped skunk appear to be in limited numbers as compared to the past few years of the refuge operation. No concerted control practices have been exercised in the immediate locality as far as we know. It is hard to interpret why the population should appear so much lower. But we are thankful for this. These two species did present predation problems on waterfowl and other birds here in the past.

It was mentioned in last year's Narrative Report that it seemed that we had excessive population of mice. We even experienced a certain amount of mouse damage on ornamental shrub plantings at the refuge work center during the winter. This year the population appears to be normal, or what could be expected for this locality. There probably is some correlation between this decline in mouse population and the decline in red fox and striped skunk population in the locality.

Occasional signs of raccoon are still seen along the river bottom. Their population is low and is no problem to us. They are still considered as a novelty animal in this locality.

#### E. Hawks, Eagles, Owls, Crows, Ravens and Magpies

Hawk observations were about the same as for a year ago. Sparrow and marsh hawks were seen more commonly than anything else. Only an occasional Buteo observation was made. Probably the most interesting hawk observation of the year was of an adult male goshawk viewed on the area during the Christmas bird count.

A repeated observation was made of a Buteo on the refuge during the latter part of December. A bird that was even scrutinized in great detail during the Christmas bird count. It was either an extremely dark melanistic phase of the common rough-leg or of the Swainson's. Observation of a melanistic rough-leg wouldn't be too uncommon. However, if it was a very dark melanistic phase of the Swainson, the observation would be unusual for this locality. We have seen normal colored Swainsons on the area during early winter but even these have been very rare observations.

Ravalli

An occasional observation was made of both bald and golden eagles during the spring and early summer. Also, a mature bald eagle was seen on the area during the Christmas bird count; rather unusual to have one visit us during mid winter.

A few horned owls remain as residents with us year round. Limited nesting activity of this species was known to occur on the center of the refuge in the timber types. An increased population was noted during October when a few apparently migrating horned owls used the refuge for a short duration

Peak build up of crows on the area was during March, when about a hundred migrants were noted. Some crows and ravens are seen throughout the valley year round. No known nesting of either species appeared on the refuge.

Nothing unusual to report on magpies. Average refuge population is about 100 birds. No increased nesting activity was noted this past spring.

#### F. Other Birds

The use of the refuge by bird watchers is a common year round activity. On a small area, such as Ravalli, it isn't practical to allow the public to have complete freedom of the area. Therefore, we attempt to conduct bird watching groups under an organized system, of office clearance, so that we know where the groups are on the refuge and can keep undesired disturbance to a minimum.

Our four major cooperative bird counts on the refuge are an arrival count in late May, a mid summer post nesting count the beginning of August, fall arrival count about the middle of September, and of course, the annual Christmas count.

Last winter we submitted for publication our refuge bird check list based on our observations for the past several years. The list, containing 163 species, was published in February. A copy of it is included at the end of this Narrative Report.

Following is a list of new birds observed and recorded this past year:

Bonaparte gull, observed in May  
Dunlin, April 27  
Semi-palmated plover, April 27  
Swainson's thrush, July 17  
Painted red start, July 17  
Savannah sparrow, August 21  
Northern water thrush, July 17 (nester)



Three further observations were made of turkey vultures during the year. That species was rated as rare or an accidental visitor in the past.

Bluebirds first arrived on the area towards the end of April. Both the western and mountain bluebird were still seen on the area during mid October.

The local Christmas bird count was a great success this year. Close to fifty people participated. Coming from distances as far away as Missoula and Darby, Montana.

The Stevensville Ranger District office served as a meeting place and hosted the group. The hosting will be our responsibility in the future, once we get our badly needed visitors' center-office complex on our area.

The Christmas count was centered with Stevensville as the hub of a 15-mile radius. Over sixty species were counted, twenty-three of these on the refuge. Probably the most unusual observations of the day were the chestnut backed chickadee, reported up Bass Canyon, and a snowy owl, seen on the benches of Sweeney Creek.

#### G. Fish

About 15 brown trout were noted in Slough Creek on tract 20 during their spawning activities in late November. We mention this observation purely as a record in the event it could serve of value in future years.

#### H. Reptiles

Nothing to report.

#### I. Diseases

Nothing to report for the refuge or the valley for this past year.

### III. REFUGE DEVELOPMENT AND MAINTENANCE

#### A. Physical Development

This has been another busy, active year. Much accomplishment and progress has been made on further developments for this relatively new refuge. The photo section of this report pictorially shows some of our main accomplishments. We refer the reader to those photos.

In order of events the sequence of the year's accomplishment were:

Part of the winter months were spent doing major repairs on our TD-14A tractor. We have an improvised vehicle shed fixed in the old barn at the work center. We heated this the best we could. And did the majority of the labor required for the repairs ourselves. The track sprockets and rollers were rebuilt. The track pins turned. And the clutch and motor tuneup as required. We probably saved enough in commercial shop labor charges to pay for the necessary parts.

Fence repairs and irrigation ditch cleanup were started as soon as the frost was out of the ground.

The majority of our time and energies were directed towards flood surveillance and control during May and the beginning of June. Abnormally deep snow pack in the surrounding mountains caused severe runoff this spring and consequent swelling of the Bitterroot River and damage in many parts of the valley. All refuge lands bordering the river were subject to threat and some damage. Everything considered, our losses were at a minimum. We were able to cope with the situation ourselves, using what equipment, personnel and funds we had on hand. After flood abatement, considerable time was spent correcting the damage. The photo section of this report shows the highlights of those occurrences.

Next, we went into the physical management of our farming and grazing program. Also, we did further development refinements on projects initiated last year.

Considerable time was spent surveying and making preparations for the proposed construction of major dike No. 5. That dike is located on the county road and impounds the major warm water creek of the refuge. We considered it a major required task for its development would offer some outstanding habitat. Also it is one of the major ponds viewed by the public visiting the refuge or traveling through the refuge on the county road.

The construction of that dike was to be done with equipment rental and with the guidance and assistance of our personnel and our limited machinery. It was to be started shortly after the beginning of the fiscal year and to be completed before September 1. The completion provision was requested by the County Engineer and County Commissioners. It was to assure that the school bus and mail route would be back into operation by the time school started at the beginning of September. Due to several complications, the project didn't commence until the latter part of August and was completed the beginning of October.

We occupied much of mid summer by doing further fencing, posting and commencing cleanup on tract 20. Tract 20 came under our complete ownership this year.

Waterfowl habitat improvements were commenced on tract 20 as well as inaugurating a farming program, building surveying and fencing. Tract 20 is a rather vital unit from a wildlife management standpoint due to its critical location and varied habitat. The bench of that tract will eventually be where our office-visitor center complex will be located.

The public picnic area, located in the southwest corner of the refuge, was completed this summer. A good public road now goes from the county road down to the river where there are four picnic units established and two outhouses. The arrangement is rather basic but neat and substantial.

The initial restoration of the Nickerson Ditch was completed. This is an important water conveyor ditch that would effect much of the northwest portions of the refuge. (See map following Part VI D. for location reference.) The ditch can be used as a conveyor of waters that originated to the south. For example, from Burnt Fork Creek, the Supply Ditch, Warburton sloughs and the South Drain. With restoration of the ditch, the waste waters of the supplies mentioned could be employed in the central and north parts of the project. The problem was that a portion of the Nickerson Ditch was originally constructed on gravelly soils with no seal layer. Bentonite failed to work. The soils allowed percolation of many hundreds of inches of water. We have devised a system where we bypassed the problem area and created a small pond and marsh area by doing so. The further refinements of this project will be completed next spring. Test runs so far give all indications that our plan is working as proposed. As mentioned, this is a vital water conveying system. Plans in the past have been to eventually cement line the ditch at a cost of \$7,000. We are optimistic that we have accomplished the same results for \$280 and also created another small pond and marsh area. If our efforts fail to do the job, we still have made the added marsh and pond at about \$20 an acre. Not too bad an investment really.

Once Dike No. 5 was commenced, it had full priority and all our efforts were applied to that project. Eight steps were necessary for the completion of that dike: Staking, structure purchase and installation, earth moving, grading, nesting island construction, graveling and surfacing, fencing and posting.

During October pond No. 6 on tract 20 was completed. Preparations were made for the hunting season on the public hunting area. And the initial surveys were done on tract 10. That tract will come into our full ownership on January 1, 1968. Currently it has agricultural tenures in effect.

The remainder of the year was used for hunting season patrol, equipment repair, further fencing, shop and residence repairs and preparations for duck banding.

This was another busy field season. We felt we got a lot done for the dollar, for the man-hour, and above all, for our wildlife objectives.

#### B. Plantings

A total of 281 acres were planted to barley under sharecropping arrangements. This was done on tracts 11, 19, 21 and on our newly acquired tract 20. Further, 30 acres in Tract 21 were summer fallowed and planted in the early fall to winter wheat. Purpose of that planting is for mid winter and early spring waterfowl browse.

Of the total acreage planted to barley, about 200 acres were permittees' shares. About 33 acres were harvested for the government (yielding 1505 bushels). And about 50 acres were left unharvested for field waterfowl feed.

Further incidental plantings consisted of sowing key pasture spots with white dutch clover and pasture grass seed. And of brush and tree seedling plantings.

A map follows this section of the report to orientate the reader as to where these incidental plantings were done. The clover-pasture grass mixture was done for range improvement. The brush and tree seedlings were planted strategically for bird food and cover, shelterbelt, and esthetic values. A total of 800 brush and tree seedlings were planted. Survival of these plantings were rated as fair, probably 40 to 65 percent. Drouth conditions of late summer caused a certain amount of unexpected mortality.

### C. Collections and Receipts

The 800 tree and brush seedlings mentioned above were purchased in Missoula from the State Forest Nursery.

### D. Control of Vegetation

Limited spraying was done by sharecroppers on tracts 11, 19, 20 and 21 to combat mustard infestation and thistle in the barley fields. Two-four D was applied with good results.

No further weed control was practiced this season.

### E. Planned Burning

The only burning conducted was incidental burning during some of our irrigation ditch cleaning and of debris and slash disposal on newly acquired tracts.

### F. Fires

This has been an extremely dry year. A record forest fire year in Idaho, Montana and British Columbia. Forest fires were long, hot, large and consistent. Extensive grass fires were relatively common also.

All public lands in this locality were closed most of the summer due to fire hazard. This included both state and federal. However, the refuge was left open to public use. We established fire lanes, erected signs as to public behavior and danger potentials, and received excellent cooperation from the public. We had no fires on the refuge this year.

The station's Fire and Safety Plan was written this fall and submitted to Regional Office for approval. The plan includes details as to our fire suppression and suppression program and policy. Further, currently, we are attempting to formulate an Agreement of Understanding with the local ranger district of the Forest Service to assist us in the event of serious refuge fires. Fires are of paramount concern to us. Something we are constantly alert of. Especially during a hot, dry summer such as we have just experienced.

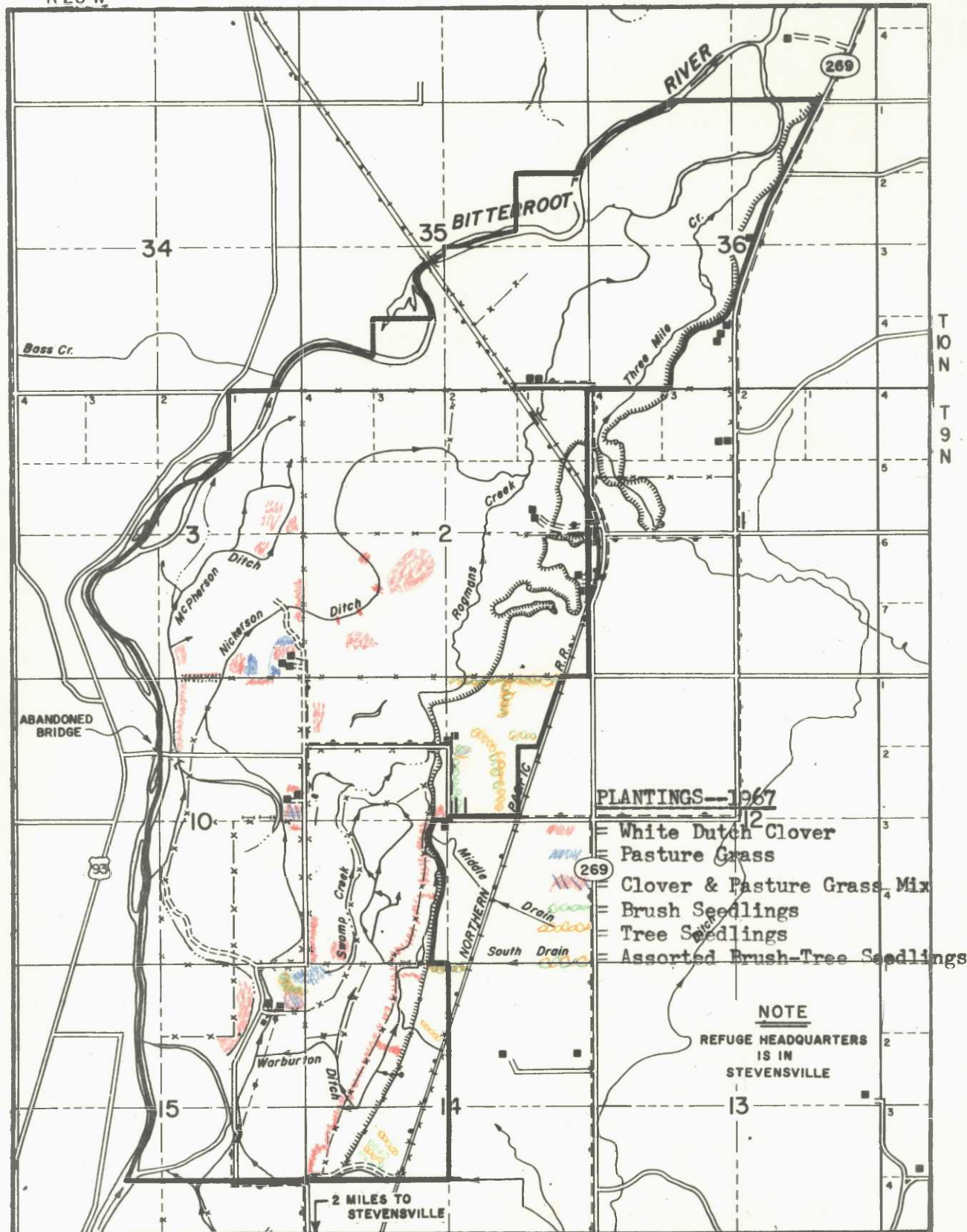
# RAVALLI NATIONAL WILDLIFE REFUGE

RAVALLI COUNTY, MONTANA

UNITED STATES  
DEPARTMENT OF THE INTERIOR

U S FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE

R 20 W



COMPILED IN THE BRANCH OF ENGINEERING  
FROM SURVEYS BY AERIAL PHOTOGRAPHY,  
F.W.S., S.L.M., U.S.G.S., AND MONTANA STATE  
HIGHWAY DEPARTMENT.

PORTLAND, OREGON APRIL 1965

Scale 0 10 20 40 60 CHAINS  
0 1/8 1/4 1/2 3/4 1 MILES

PRINCIPAL MERIDIAN

TOWNSHIP  
DIAGRAM

MEAN  
DECLINATION  
1962

IR MONT 555 410



#### IV. RESOURCE MANAGEMENT

##### A. Grazing

Refuge grazing commenced the third week in May. It terminated between September and December, depending on the specific tract. We allowed one permittee to graze cattle to an excessive amount on portions of tract 19 during July. The area used was that portion of the tract destined to be dozed for the construction of dike and pond No. 5. By removing as much vegetation as possible, it assisted in more efficient earth moving and easier dike construction. Also, it made it possible to derive better revenue from forage that would be wasted. This was a two-way gain, for revenue and better earth moving.

Tract 20 came under our ownership this year. The small pasture of that tract was grazed this summer in preparation for a dike construction also. A permit was issued for 10 head of cattle for the season.

##### B. Haying

None done this year.

##### C. Fur Harvest

None requested or done this year.

##### D. Timber Removal

No commercial timber removal done. The only timber cut was some limited timber stand improvement where trees were a hazard to structures or in the way of new fence construction.

##### E. Commercial Fishing

Not applicable.

##### F. Other Uses

The potato cellar formerly located on tract 11 and mentioned in last year's narrative report is now removed. That site has been developed for the betterment of waterfowl management by impounding.

Limited aparian activity continued under permit this year. The beehives are located along the south refuge boundary. The owner advocates they did well there this year and would like to continue his permit in the future. We see no conflict with our responsibilities and permittee's objectives in this enterprise.

## V. FIELD INVESTIGATION OR APPLIED RESEARCH

### A. Progress Report

Based on the three years operation of this refuge, a Wildlife Inventory Plan was written and approved. Wildlife censusing is relatively simple on this small station, an area with good access roads and small impoundment water units. However, a plan here, as on all refuges, is of paramount importance to gain systematic uniformity and consistency.

The station's bird check list was compiled and published last winter. It was based on observations gathered since the refuge was first manned in 1964. The list contains 163 species. Its distribution has been received by the public very well. Bird watching is an important recreation in this area.

Small nesting islands (earth pushups) were constructed in ponds No. 1 through 4 during the fall of 1966. These islands were still unvegetated this past nesting season, of course. However, they were used considerably as duck loafing sites and two pairs of Canada geese did nest on the islands. These islands are relatively economical to construct during the initial development of the ponds prior to flooding. We intend to continue this practice on all new ponds built. Wave or wind erosion does not appear to be a serious problem in this locality. The islands constructed a year ago have vegetated voluntarily within this growing season.

Six more wood duck houses were constructed and erected at choice locations throughout the refuge this spring. This brings the total amount of wood duck houses on the area to 22. About one-third of the houses are crude looking affairs made of rough lumber. The other houses are commercial ones purchased as prefab kits from a supply house in Iowa. The commercial units are of galvanized sheet metal and look very similar to a small rocket. Some of the galvanized houses were painted yellow and some left the natural galvanized color. All the wooden houses were left as raw wood. Our observations still indicate that wood ducks in this area have the greatest preference towards the rough wooden houses, and especially if placed between ten and twenty feet above the water level. A hen hooded merganser appeared interested in one of the galvanized houses. She stayed near the house for the best part of a week. And was seen rather frequently going in or out of the house. However, her final nesting choice was in the cavity of a nearby dead cottonwood tree.

Eight hundred tree and brush seedlings were hand planted on various spots of the refuge this spring. Locations are given on the map that follows section B of Part II of this report. The main purpose

of the plantings is for increased bird food and cover in the future, with emphasis on song birds. We will probably replace a few seedlings each spring until a thrifty stand is established. Most of our planting sites do not receive irrigation water and we will have to depend to a large extent on summer rains for required moisture.

Six duck banding trap sites were prepared late this fall. We will do our initial station's waterfowl banding program this winter as a post hunting season project. Sites are located on tracts 10, 11, 13 and 20. Funnel traps will be used. We are optimistic about deriving some worthy information in the future from this project. Quite a few questions that were answered in the past only with speculation should be clarified. For example, it has been speculated that once ducks leave the Ninepipe-Pablo refuge complex, they come, at least for a short period of time, to the Bitterroot Valley. This is possible. We will see.

## VI. PUBLIC RELATIONS

### A. Recreational Uses

Our NR-6 form, Public Relations, shows this breakdown on refuge visits: hunting 1500, fishing 2200, miscellaneous 2640. Two years ago the figures were: 342, 2000 and 370, respectively. It has been an expected increase. Our development, operations, and an intensive information-education program locally has directed attention towards us. The reader should remember that Ravalli Refuge is situated in an area of a high density human population for Montana. Hamilton, the county seat, is only 20 miles to the south, and Missoula, a commercial and educational hub, is located 30 miles to the north.

Organized groups using the refuge and requesting off refuge presentations have increased again this year. We have made it a point to get news releases in the three local newspapers at least every six weeks.

We have developed a small public picnic area in the southwest corner of the refuge. Access to it is gained from the county road that goes through the refuge. The area offers the public access to the Bitterroot River for that aspect of outdoor recreation, as well as a good scenic route, family picnic area and a concentrated center for song bird watching. The area developed to date is basic. We have had only limited funds and time for the project. But it is temporarily adequate and does meet the local public needs. It has been well received by them.

Elementary school groups studying in conservation, senior biology classes, and the University of Montana ornithology department have made extensive use of refuge tours this past spring.

Several slide showings were given to adult groups. These were given as a prelude to a tour of the refuge. It was necessary that we darken the center milking shed of the old barn at the work center and did our projecting there. Sort of a crude arrangement when part of our discussion theme is esthetic values and public use enjoyment of a federal refuge.

We still have a large obstacle in meeting the public: It is in not having an organized building for meeting with these groups. Our rented office space is of a temporary nature, rather small and is situated in Stevensville. To date our solution has been to assemble organized groups visiting the refuge in the pasture back of our temporary work center barn. We are sorely in need of the office-visitors' complex. One that we have programmed for ever

since the establishment of the refuge. It is certainly of high priority that we acquire the building complex so as to gain our most efficient administration of the area and to meet the public best in our information and education programs.

#### B. Refuge Visitors

Temporary office space is secured in the town of Stevensville. Office visitors are quite common daily. Bird watchers, hunters, fishermen and other nature orientated recreationists stop in frequently to inquire about topics of their interests.

A county road runs through the refuge. Many visitors use that road year round for driving and sight seeing. Numbering probably in excess of 7,000 total individuals annually. The county road is also situated on our dike No. 5 mentioned in the Physical Development part of this report.

A bound office ledger is maintained of all official visitors to this station. The log, a permanent station file, shows an added 138 official visits during the past year.

#### C. Refuge Participation

Again this year our largest participating efforts were with bird watching groups and garden clubs. We were called upon frequently to give guided tours of the refuge, collaborate on bird counts in the area, and to give talks and discussion to various educational, sportsmen and fraternal groups.

We had the usual requests from school groups to be taken on guided tours of the refuge this past spring. Working with children, we believe, is extremely important. This is where the future of conservation rests. Also, we find it rewarding working with groups of children. Their enthusiasm and hunger for nature study information is remarkable.

Conservation films were shown to nine groups during the year, with total attendance of 225 people.

#### D. Hunting

Thirty-three percent of the refuge was open to hunting. A map follows this section showing the area open to the public.

Waterfowl. An extremely liberal waterfowl hunting season was granted for Western Montana, which is a portion of the Pacific Flyway. Waterfowl season started October 7 and ended January 4th at sundown.

Daily bag and possession limit was six ducks of which not more than two could be canvasback. Mallard are the main birds bagged in this locality. Goose season was the same as for ducks with daily bag and possession limit of six geese, with no more than two Canada geese or their subspecies.

Over all, the hunting season was rated as fair. It appeared that we had a dribble migration commencing in September and terminating around Thanksgiving time. No large concentrations of birds were reported using the valley, even though it was reported as an exceptional hatching year to the north.

Warm weather at the beginning of the season kept most of the valley's waters open for the first month of the season. Waterfowl hunting then was rated as quite good. However, pressure was somewhat at a minimum. Many hunters were still in the mountains in pursuit of big game.

Hunting pressure on the refuge was heaviest toward the close of the season. This was the time when the ducks were most scarce.

Mallards were the main ducks taken by hunters. A few hunters towards the end of the season were rather lucky in bagging Canada geese.

Pheasants. Pheasant season was from noon October 29 through November 26. The daily bag limit was three cocks. The refuge pheasant population, as well as the entire valley, is at an extremely low level and has been so for several years.

Hunting pressure was rated as moderate. A few local hunters used the area to hunt pheasants every day of the season, but their harvest was light. We estimate that there were 50 wild reared pheasants on the refuge. Also about 150 (100 roosters, 50 hens) were liberated on the hunting area by the Fish and Game Department one month before the season. Estimated season's refuge harvest was 41 birds.

Archery, White-tailed deer hunting. The archery season along the river bottom of the valley, including the refuge, was September 25 to November 27. No known hunters used the refuge for this specific recreation this year. The entire refuge has a population of only about ten deer.

#### E. Violations

We finally got caught up enough on fall work projects so that we were able to put more time and efforts on hunting season law enforcement. During the past several falls our endeavors were



pretty well limited to spot checking and having field representation.

We apprehended three late shooting cases. Two were fined \$28.50 each. The third violator was turned over to juvenile authorities. No decision on that case yet. We apprehended one case of an unplugged 12-gauge shotgun. Violator fined \$28.50. And we apprehended one violator that had neither license nor duck stamp in his possession. That case was contested by the family's attorney. The case has yet to appear in court. All cases were handled by the local Justice of the Peace.

The local State Fish and Game Warden also made some checks on the public hunting area this fall. He apprehended two late shooters. Fined \$28.50 each.

Much late shooting was heard throughout this part of the valley again this season, as in the past. But by necessity all our enforcement efforts were concentrated on the refuge.

We made it a point this fall to have newspaper publications of every violator that we apprehended, and the out come of the case. We are hoping that this type of publicity will serve an information-education purpose. And to discourage some potential borderline violators.

We know of two swans killed and removed from the public hunting area this fall. There were hunter witnesses to the event. But we could not get the cooperation of the witnesses to have them turn Court's evidence.

The point that we found ironical this fall was that there is nothing in the state game proclamations declaring it a mandatory requirement for a waterfowl hunter to own and possess a current federal duck stamp. We check all hunters for a valid state license, of course, to assist the state in their law enforcement. However, from a state level, it is not required for a hunter to have the federal stamp. This certainly causes conflicts and confusion when we attempt to arraign our cases before a Justice of the Peace.

# RAVALLI NATIONAL WILDLIFE REFUGE

RAVALLI COUNTY, MONTANA

UNITED STATES  
DEPARTMENT OF THE INTERIOR

U. S. FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE

R 20 W

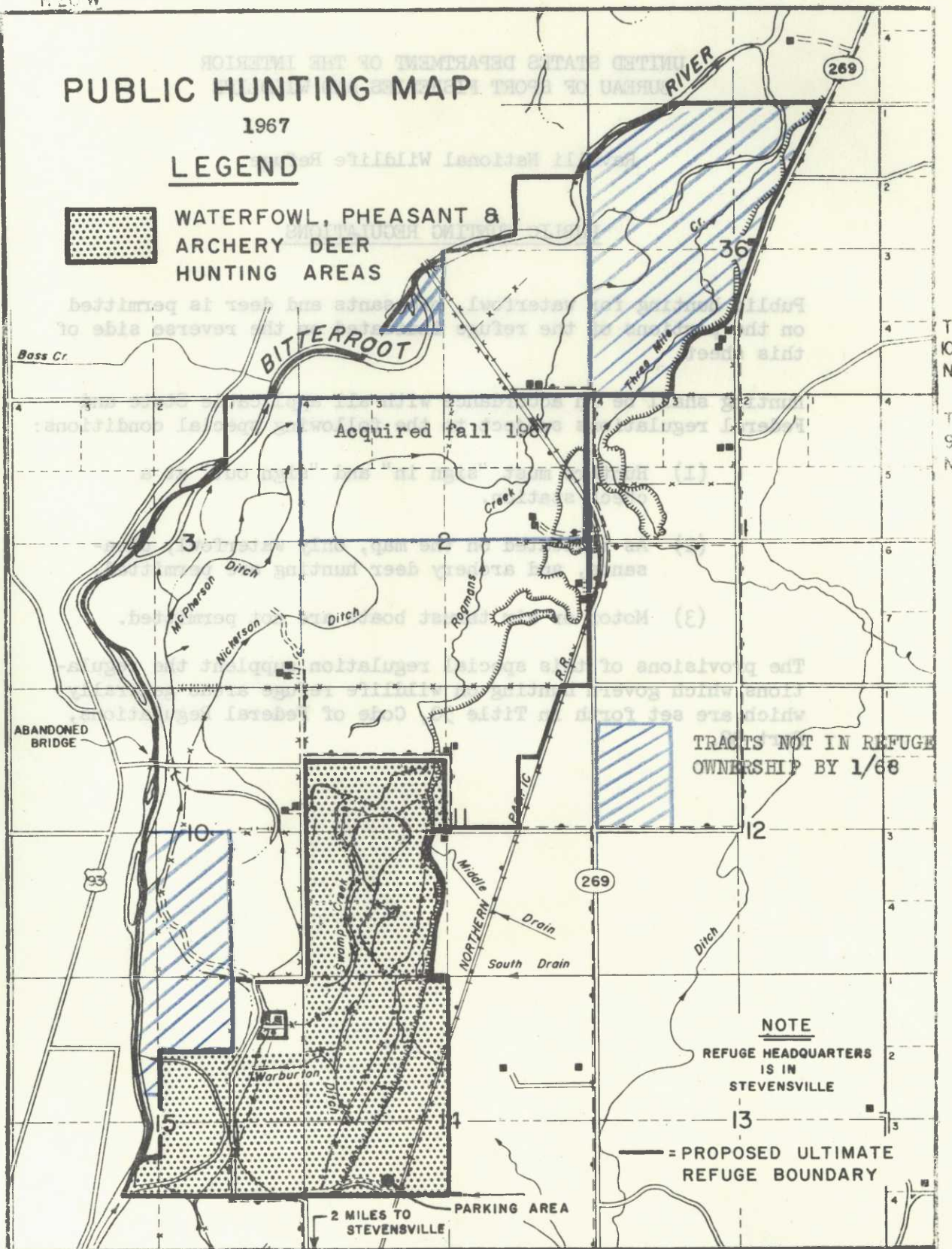
## PUBLIC HUNTING MAP

1967

### LEGEND



WATERFOWL, PHEASANT &  
ARCHERY DEER  
HUNTING AREAS



COMPILED IN THE BRANCH OF ENGINEERING  
FROM SURVEYS BY AERIAL PHOTOGRAPHY,  
FWS, BLM, USGS, AND MONTANA STATE  
HIGHWAY DEPARTMENT.

PORTLAND, OREGON

AUGUST 1965

PRINCIPAL MERIDIAN

Scale 0 10 20 40 60 CHAINS  
0 1/8 1/4 1/2 3/4 1 MILES



TOWNSHIP  
DIAGRAM



MEAN  
DECLINATION  
1962

IR MONT 655 41

UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF SPORT FISHERIES AND WILDLIFE

1967

Ravalli National Wildlife Refuge

PUBLIC HUNTING REGULATIONS

Public hunting for waterfowl, pheasants and deer is permitted on the portions of the refuge indicated on the reverse side of this sheet.

Hunting shall be in accordance with all applicable State and Federal regulations subject to the following special conditions:

- (1) Hunters must "sign in" and "sign out" at a check station.
- (2) As indicated on the map, only waterfowl, pheasants, and archery deer hunting are permitted.
- (3) Motor or air thrust boats are not permitted.

The provisions of this special regulation supplement the regulations which govern hunting on wildlife refuge areas generally which are set forth in Title 50, Code of Federal Regulations, Part 32.



## VII. OTHER ITEMS

A. Items of Interest

In last year's Narrative Report we mentioned the pending law suit between several Hamilton attorneys, plaintiffs, and the Northern Pacific Railroad. The suit was over a small parcel of private land touching the railroad and the refuge to the north of here. The railroad ripped part of the private river bank with old car bodies. The plaintiffs alleged damage to their land with reference to esthetic values and illegal trespass.

The plaintiffs have changed their plea of suit to operating an illegal junk yard. The case is scheduled to be tried in court this spring.



# BIRDS OF THE RAVALLI NATIONAL WILDLIFE REFUGE



Ravalli National Wildlife Refuge was established in December 1963. Proposed boundaries will encompass about 2,800 acres. The area is located in the intermountain Bitterroot Valley of western Montana near the town of Stevensville.

Elevation of the refuge is approximately 3,300 feet above sea level. It is primarily river bottom land, formerly used for agricultural purposes.

Habitats include timbered patches of third growth ponderosa pine, cottonwood and its brush associates, wet meadows, and marshes, and some upland and agricultural lands. Soils are shallow. Sand and gravel deposits are common. Though the primary responsibility of the refuge is waterfowl management, a wide assortment of other bird life also uses the area. All bird life has consideration in development plans.

Surrounding timbered mountains, brushy and grassland foothills, and the Bitterroot River and its many tributaries, all contribute to the great variety of birds seen on this small refuge at various times. The relatively mild weather of this inland valley affects bird migration through the region.

Initial refuge development not only has attracted waterfowl, but numerous shore birds as well. Additional development will increase this attraction. Large concentrations of birds cannot be expected on a refuge of this size. However, the great and interesting variety of bird life is very rewarding to the visitor. Wood ducks and hooded mergansers nest in the river bottom woodlands; mallards and teal nest in the marsh; assorted warblers and related forms are common in the brush types; mountain bluebirds, rufous hummingbirds, evening grosbeaks, and Lewis' woodpeckers can be viewed in their respective proper habitat and season. The great blue heron is seen commonly and a lucky observer might see a majestic golden eagle or a relatively rare osprey.

The following list contains 163 species. It has been compiled from refuge personnel's observations since the establishment of the refuge, as well as contributed observations of qualified members of the local Stevensville bird watching group. The list is in accordance with the Fifth (1957) A.O.U. Check-list.



UNITED STATES DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE



Season

Abundance

S - March-May  
S - June-August  
F - September-November  
W - December-February

a - abundant  
c - common  
u - uncommon  
o - occasional  
r - rare

\*Nests on refuge

S S F W

S S F W

Horned Grebe	r	Marsh Hawk	u u u o
Eared Grebe	o o	Osprey	o o o
Western Grebe	r	Prairie Falcon	r
Pied-billed Grebe	o r	Peregrine Falcon	r
*Great Blue Heron	c c c c	Pigeon Hawk	o o
Black-crowned Night Heron	r	*Sparrow Hawk	c c c u
American Bittern	r	*Ruffed Grouse	r r r r
Whistling Swan	r r	*Ring-necked Pheasant	u u u u
*Canada Goose	u u u u	*Gray Partridge	r r r r
Snow Goose	r r	*Virginia Rail	o o o
Ross' Goose	r	Sora Rail	r r r
*Mallard	a a a a	*American Coot	c u a c
*Gadwall	c c c c	*Killdeer	c c a o
Pintail	c u c u	*Common Snipe	c c c u
*Green-winged Teal	c c c o	Spotted Sandpiper	o o o
*Blue-winged Teal	c c c	Solitary Sandpiper	o o
*Cinnamon Teal	c c c	Greater Yellowlegs	u
*American Widgeon	c c c c	Lesser Yellowlegs	u
Shoveler	u u	Least Sandpiper	o
*Wood Duck	c c c	Long-billed Dowitcher	o u
Redhead	o o	Semipalmated Sandpiper	u
Ring-necked Duck	r o	Western Sandpiper	o u
Canvasback	r r	Sanderling	r
Lesser Scaup	o o	American Avocet	o o
Common Goldeneye	o o	*Wilson's Phalarope	c u u
Barrow's Goldeneye	r o	Northern Phalarope	c u
Bufflehead	o o o o	California Gull	o r o
Ruddy Duck	c	Ring-billed Gull	o r o
*Hooded Merganser	o u u	Common Tern	r
*Common Merganser	o o o o	Black Tern	r o
Red-breasted Merganser	o r o o	Rock Dove	u u u u
Goshawk	o o o	*Mourning Dove	c o c
Sharp-shinned Hawk	o o o	*Great Horned Owl	u u u u
Cooper's Hawk	o o o	Pygmy Owl	r
*Red-tailed Hawk	c c c c	Short-eared Owl	o o o
Swainson's Hawk	c o c	Saw-whet Owl	r
Rough-legged Hawk	o o o	Common Nighthawk	u u u
Ferruginous Hawk	o o	Vaux's Swift	o o
Golden Eagle	o o o o	White-throated Swift	o o
Bald Eagle	r r r	Broad-tailed Hummingbird	r r r



	<u>S</u> <u>S</u> <u>F</u> <u>W</u>		<u>S</u> <u>S</u> <u>F</u> <u>W</u>
*Rufous Hummingbird	o u u	*House Sparrow	c c c c
Calliope Hummingbird	r	Bobolink	u u
Belted Kingfisher	o o o o	*Western Meadowlark	a a c o
*Red-shafted Flicker	c c c u	*Yellow-headed Blackbird	u u o
Pileated Woodpecker	o o o o	*Red-winged Blackbird	c c c o
*Lewis' Woodpecker	u u	*Bullock's Oriole	o o o
Yellow-bellied Sapsucker	o o o	*Brewer's Blackbird	u c c o
*Hairy Woodpecker	u c u u	Brown-headed Cowbird	o u u
*Downy Woodpecker	u c u u	Western Tanager	o u o
*Eastern Kingbird	u c	Lazuli Bunting	r
Western Kingbird	o o	*Evening Grosbeak	u o o u
Western Wood Pewee	o c	Cassin's Finch	u o
Horned Lark	u u	Common Redpoll	o
*Violet-green Swallow	c u u	Pine Siskin	o o o
*Tree Swallow	c c c	*American Goldfinch	o o o o
*Bank Swallow	u u u	Red Crossbill	r
*Rough-winged Swallow	c c	Rufous-sided Towhee	r
Cliff Swallow	o	Vesper Sparrow	o
*Barn Swallow	c c c	Lark Sparrow	o
Steller's Jay	o o	*Oregon Junco	c o c c
*Black-billed Magpie	c c c c	Tree Sparrow	o o o
Common Raven	r o	Chipping Sparrow	o o o
Common Crow	c u c o	White-crowned Sparrow	o r o o
Clark's Nutcracker	o o	Fox Sparrow	o o o u
*Black-capped Chickadee	c u c c	Song Sparrow	u u o r
Mountain Chickadee	o o o	Snow Bunting	o o
*White-breasted Nuthatch	c c c c		
*Red-breasted Nuthatch	c c u o		
Dipper	r		
*House Wren	o o o	The following seven species are rare or accidental visitors and have been recorded only once or twice:	
Long-billed Marsh Wren	o o		
Catbird	o o		
*Robin	c c c o	Red-necked Grebe	
Varied Thrush	r	Turkey Vulture	
Western Bluebird	r r	Snowy Owl	
*Mountain Bluebird	u u u	Turkey	
Townsend's Solitaire	o r	Black-billed Cuckoo	
Ruby-crowned Kinglet	u r o	Pinyon Jay	
Water Pipit	u	Pine Grosbeak	
Bohemian Waxwing	o u		
Cedar Waxwing	o u		
Northern Shrike	o o o		
*Starling	a a a c		
Red-eyed Vireo	o o		
Yellow Warbler	c c o		
Myrtle Warbler	o		
*Audubon's Warbler	c c u		
MacGillivray's Warbler	o o		
*Yellowthroat	c c		
Wilson's Warbler	u o		

## PHOTO SECTION

The following 42 photos illustrate the highlights of our year's accomplishments and activities.

This is a rather large photo section, we know. However, we feel that the pictures describe more fully than words what we want to tell of this new refuge. Also, the pictures are to serve as a permanent visual record for the future.



The field season started with a bang. FLOOD! An abnormally high snowpack of last winter caused severe flooding throughout much of Montana. All our lands along the Bitterroot River received some damage. Fences and roads were damaged. Banks were eroded. Minor dikes were washed out. And some pastures received excessive sand deposits.

We were able to restore and repair everything without further financial help. But we had to really scrutinize our budget and time.

NR 67-1, 2, 3, 4. Tracts 12 & 13, May.

Tract 13  
Fall 1967



Tract 13  
May 1967



The Bass Crossing structure that we built last year (see 1966 N.R.) was almost completely crested by the swollen river. That's the river in the foreground. Fortunately it received only very minor damage. NR 67-5, 6



We mentioned in last year's N.R. about our tree riprap along the river on tract 12. This was an economy erosion control measure in case of flood emergencies. We needed it this spring. And it worked. NR 67-7. Tract 12, May



We rented a dozer for one day to help our TD-14. We built an emergency dike in the S.W. corner of the refuge. And actually turned the spilling river. The flood waters were threatening serious damage to many low spots on the west side of the refuge. NR 67-8. Tract 21W, May





After the hectic times of the flood  
we got going on routine essentials.  
Like details of our grazing and  
farming program. And irrigation  
ditch cleaning and repairing.  
NR 67-9, 10, 11. Tract 20, 21, 22.  
May, June, June





We hand planted 800 seedlings this spring. Objective is critical location bird cover and feed. And as a screen to unsightly views by the refuge boundary.  
NR 67-12, 13. Tract 21, Public Hunting Area, March.



NR 67-14  
Looking west  
BEFORE

August



NR 67-15

AFTER

October



Our most concentrated efforts this season were to build dike #5. It was placed on the county road. Creates one of our major ponds. It was done with the first construction monies we have ever received here. Several dozen small nesting islands were built before the impounding.



Equipment rental was contracted on an hourly basis. And we employed our TD-14 and scraper. 48" culverts w/9' risers now control the warm steady flowing waters of Slough Creek.  
NR 67-16. September



Fence, signs and the power line had to be relocated.

Looking west. BEFORE

NR 67-17. August



AFTER

NR 67-18. November

The pond is on the public hunting area. The Dike on the county road. Neat fencing, posting and Safety precautions at the risers were all critical necessities.

Tract 20 came under our ownership this year. Basic cleanup, fencing and building removal or restoration was done.

April. BEFORE

Looking east.



November. AFTER

This shows the cleanup and also a portion of Dike 5 (see photos 14 and 15).



Fencing and posting is a large item on any tract we acquire.



NR 67-19, 20, 21.



More on tract 20 —



Before and after shots of the pond, nesting islands and new fence built on tract 20.

Looking north.



Slough Creek was backed up by a small earth dike. We used sheet piling and rock riprap for the spillway structure.

Looking south.



Several of the truck trails built last year were further refined this season. This trail on tract 12 serves as access, livestock driveway and water control structure. NR 67-25. June



The access trail started on tract 11 last year is now finished. It has proper drains, approaches, cattle guards, and is fenced. The marsh to the right is a great attraction to guided bird watchers. Many species of ducks can be seen on that warm water slough year round. NR 67-26. November





NR 67-27. May

Final cleanup on tract 11 (acquired in '66) was done this spring. All decayed or unnecessary structures and old fence were removed. The slough where the spud cellar used to be was diked creating an access road going to the trail in picture 17 and —



NR 67-28. August

also creating a good waterfowl pond situated between two grain fields.

Midsummer offered us three new experiences: The start of a bumper barley crop on our new tract 20. Receiving a purchased backhoe. And droves of face flies!



The backhoe-front end loader was one of our most needed, and now used, pieces of equipment. It should be basic equipment, like a typewriter, for every refuge!



Those aren't shot pellets in the white post. Face flies! A bumper year for them in the valley. And a very serious livestock problem.



NR 67-29, 30, 31  
Tr. 20, 20, 21. August





Tract 10 becomes completely ours  
Jan. 1, 1968. Thank goodness!  
Division of Realty could tell  
many stories about that vendor!  
So could the refuge manager!

We have completed our plans on  
what we want to do on the tract.  
Work will start early this spring.



Our big attraction to tract 10  
is this dependable warm water  
creek. A natural area for dabblers.  
And an area of excellent aquatic  
production. Surveys are completed  
as to where diking will be most  
advantageous.

Bird watchers use the area year round. These are groups guided by our personnel. Here the spring arrival count is being taken. This is on the area discussed in picture 26.

NR 67-34, tr. 12. Spring



More church and fraternal groups were escorted and lectured on the area this year. We still use the pasture back of the barn as a meeting place. We gotta get a visitors' center someday!

NR 67-35. July



Even had the Missoula Chamber of Commerce out this summer. Air conditioned bus and all.

NR 67-36. August





We still like to work with kids' groups best. They're responsive and energetic. They don't have pre-conceived opinions or an ax to grind. And above all, there is a whole world of fascination and awe for them, from an incidental beaver cutting, an empty nest or even just an ordinary deer track.

This is where the future of conservation rests!

NR 67-37, 38, 39, 40. April, May  
Tr. 11. 2nd, 3rd, & 4th grade classes



The Bitterroot flower is of great significance here in Montana. It's lore is well entrenched in our history. It is the state flower. Mountain ranges, rivers, creeks and valleys are named for it. It was a food, medicine and bartering item for the Salish, Kootenai and Nez Perce Indians and many early pioneers. The name of Ravalli Refuge was originally to be the Bitterroot National Wildlife Refuge. Only a few Salish Indians now make spring pilgrimages here to the Bitterroot Valley to collect the herb. Those that do are the very old ones, reminiscing of the past. When the valley was their's.

This delicate low-growing member of the purslane family isn't even seen most of the year. It's dormant tap root grows and produces a bloom for a short period the end of May. Then the plant becomes withered and dormant again till the following year. Blooms vary from white in color to deep pink. The plant is very select as to its site. It must have gravelly soils, of proper pH, with full sun exposure to reproduce.



The sites are becoming very scarce. Most exposures have been scooped out for the gravel. Or roads or structures now occupy the sites due to the desirable drainage.

The two truck trails that we punched through the marsh of tract 11 border a gravel outcrop of several acres. An outcrop that was isolated from exploitation in the past due to the surrounding marsh. There, this spring, we found a profusion of the Bitterroots.

The area is now set aside as one of our natural botanical and historical features. It is located in the center of picture 26.

SIGNATURE PAGE

Submitted by:

*A. A. Devan*  
(Signature)

Refuge Manager  
(title)

Date: *1/29/68*

Approved, Regional Office:

Date: FEB 28 1968

*W. A. Crawford*  
(Signature) *18*

Assistant Regional Director  
(Title)



3-1750  
Form NR-1  
(Rev. March 1953)

W A T E R F O W L

REFUGE RAVALLI

MONTHS OF JANUARY ~~TO~~ APRIL, 19 67

(1) Species	(2) Weeks of reporting period									
	1/1	1/8	1/15	1/22	1/29	2/5	2/12	2/19	2/26	3/5
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling	1	1								
Trumpeter										
Geese:										
Canada	12	35	15	70	45	30	20	32	30	30
Cackling										
Brant										
White-fronted										
Snow										
Blue										
<del>Other</del> TOTAL	12	35	15	70	45	30	20	32	30	30
Ducks:										
Mallard	5,000	4,500	3,800	3,000	2,000	1,800	2,600	2,900	3,100	2,300
Black										
Gadwall	200	100	100	50	50	50	100	100	100	50
Baldpate	400	300	300	100	100	100	100	100	100	100
Pintail		100	200	50	50	50	300	300	300	200
Green-winged teal	20	100	150	150	150	150	200	200	200	200
Blue-winged teal										
Cinnamon teal										
Shoveler	50									
Wood										
Redhead		10		10	10	10	50	100	100	50
Ring-necked		10						50	50	50
Canvasback	20	20	50	20	20	20	100	150	200	200
Scaup	100	50	50	10	10	10	50	100	100	100
Goldeneye	100	50	50							
Bufflehead	50	100	100	50	50	50		30	30	30
<del>Other</del> TOTAL	5,940	5,340	4,800	3,440	2,440	2,240	3,500	4,030	4,280	3,280
<del>Other</del> Hooded Merganser										
Common "	2		4	3	4	4		5	6	10
Red Breasted "										
Geot: TOTAL	2		4	3	4	4		5	6	10
COOT:	50	100	100	50	50	50				

3 -1750a

Cont. NR-1

(Rev. March 1953)

WATERFOWL  
(Continuation Sheet)REFUGE RAVALLIMONTHS OF JANUARY THRU APRIL, 19 67

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use		(4) Production Broods: Estimated seen : total	
	3/12 11	3/19 12	3/26 13	4/2 14	4/9 15	4/16 16	4/23 17	-- 18				
Swans:												
Whistling	11	150	40							1,421		
Trumpeter												
Geese:												
Canada	40	125	200	50	50	40	30			5,978		
Cackling												
Brant												
White-fronted												
Snow			10	10	18	50	40			896		
Blue Ross'						10	130			980		
Other TOTAL	40	125	210	60	68	200	200			7,854		
Ducks:												
Mallard	2,300	2,300	2,300	2,000	2,000	2,000	2,000			321,300		
Black												
Gadwall	50	100	100	100	100	150	200			11,900		
Baldpate	100	100	100	100	500	300	300			22,400		
Pintail	200	400	500	500	400	300	300			20,050		
Green-winged teal	200	300	300	400	300	300	300			25,340		
Blue-winged teal					20	50	100			1,190		
Cinnamon teal												
Shoveler					10	50	100			1,470		
Wood					2	10	20			224		
Redhead	50	50		100	50	50	50			4,830		
Ring-necked	20	50			50	100	100			3,360		
Canvasback	100	100			50	10	100			8,120		
Scaup	100	100				100	100			6,860		
Goldeneye			50	200	100	50	50			4,550		
Bufflehead		20		50	50		100			4,970		
Ruddy TOTAL	3,120	3,320	3,350	3,450	3,632	3,470	3,820			445,564		
Wing-banded Merganser	4			6	10	20	20			420		
Other												
Common "	2				30		50			840		
Red Breasted "												
TOTAL	6			6	40	20	70			1,260		
COOT				10	100	100	500			7,770		
				(over)								



3-1751

Form NR-1A  
(Nov. 1945)MIGRATORY BIRDS  
(other than waterfowl)

thru

Refuge RavalliMonths of JanuaryApril1957

(1) Species  Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production		(6) Total
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young Estimated Number
<b>I. Water and Marsh Birds:</b>									
Great blue heron	6 from last period		12	4/30	12	still present			
Eared grebe	1	4/18	75	4/30	75	"			
Horned grebe	5	4/21	100	4/30	100	"			
<b>II. Shorebirds, Gulls and Terns:</b>									
Killdeer	40 from last period		60	4/30	60	4/30			
Wilson's snipe	1	4/10	75	4/30	75	4/30			
Lesser yellowlegs	6	4/27	20	4/30	20	4/30			
Avocet	1	4/15	10	4/30	10	4/30			
Ring billed gull	7	4/29	7	4/29	7	4/29			
Wilson's phalarope	2	4/21	6	4/30	6	4/30			

(over)

	(5)	(6)	(7)	
	Total Days Use	Peak Number	Total Production	SUMMARY
Swans	1,421	150		Principal feeding areas <u>Emphasis on tracts 11, 20, 19, 21</u>
Geese	7,854	200		and other ponds.
Ducks	445,564	5,000		Principal nesting areas —
Coots	7,700	500		
				Reported by <u>G. A. Devan, Refuge Manager</u>

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

Much use of oattail on tract 11 during first half of January. Began using standing grain on tract 19 mid January.

Interior Duplicating Section, Washington, D. C.  
1953

(Bald eagle, 1/17 picking duck cripples tr. 19.)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:					
Mourning dove	2	4/27	20	4/30	50 still present
White-winged dove					
IV. Predaceous Birds:					
Bald eagle	2	1/17	2 all period	1	4/15
<del>White-headed eagle</del>					
Golden eagle	1	2/27	1	2/27	1
Duck hawk					
Horned owl	10 fr. last period	20	2/10	10 resident	
Magpie	100 " "	200	Feb.	100 " "	
Raven	1	1/16	12	March	4 4/27
Crow	30 fr. last period	100	3/26	20 still present	
Red tailed hawk	2 " "	5	3/26	4 " "	
Swainson's hawk	1 " "	2	3/26	1 4/15	
Sparrow hawk	10 " "	20	April	20 still present	
Marsh hawk	6 " "	10	March	6 resident	
Rough leg hawk	1	1/8	1	2/7	1 4/30
Osprey	1	2/27	2	3/17	2 resident-transient
Reported by G. A. Devan, Refuge Manager					

#### INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)  
II. Shorebirds, Gulls and Terns (Charadriiformes)  
III. Doves and Pigeons (Columbiformes)  
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.



3-1751

Form NR-1A  
(Nov. 1945)MIGRATORY BIRDS  
(other than waterfowl)Refuge RavalliMonths of January

thru

April1957

(1) Species  Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production		(6) Total
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young Estimated Number
<b>I. Water and Marsh Birds:</b>									
Great blue heron	6 from last period		12	4/30	12	still present			
Eared grebe	1	4/18	75	4/30	75	"			
Horned grebe	5	4/21	100	4/30	100	"			
<b>II. Shorebirds, Gulls and Terns:</b>									
Killdeer	40 from last period		60	4/30	60	4/30			
Wilson's snipe	1	4/10	75	4/30	75	4/30			
Lesser yellowlegs	6	4/27	20	4/30	20	4/30			
Avocet	1	4/15	10	4/30	10	4/30			
Ring billed gull	7	4/29	7	4/29	7	4/29			
Wilson's phalarope	2	4/21	6	4/30	6	4/30			

(over)

3-1752  
Form NR-2  
(April 1946)

UPLAND GAME BIRDS

Refuge Ravalli

Months of January thru April, 19 67

(1) Species	(2) Density		(3) Young Produced	(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd. Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ringed neck pheasant	Brush, grass, agriculture. 2,000 acres	45		2M/1F				45	10% predator and winter loss from last period

## INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.\*

- |                     |  |
|---------------------|--|
| (1) SPECIES:        | Use correct common name.   |
| (2) DENSITY:        | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.  |
| (4) SEX RATIO:      | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.  |
| (5) REMOVALS:       | Indicate total number in each category removed during the report period.   |
| (6) TOTAL:          | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.   |
| (7) REMARKS:        | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.  |

\* Only columns applicable to the period covered should be used.



3-1754

Form NR-4

(June 1945)

## SMALL MAMMALS

Refuge Ravalli

Year ending April 30, 1967

(1) Species	(2) Density	(3) Removals	(4) Disposition of Furs							(5) Total				
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator * Control	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Popula- tion
								Permit Number	Trappers Share	Refuge share				
Mink	Marsh. 800 acres	32												25
Beaver	Marsh. 800 acres	200												4
Muskrat	Marsh. 800 acres	6												150
Striped skunk	Grass, brush. 2200 acres	73			5									30
Red fox	" "	185			2									12
Yellow-bellied marmot	Upland. 1000 acres	50			4									20
Red squirrel	Timber. 700 acres	14												50
Columbian ground squirrel	Grassland. 1000 acres	6												200
Raccoon	Riverbottom & back- water. 100 acres	7												15
Badger	Grassland. 1000 acres	250			1									4
* List removals by Predator Animal Hunter														

\* List removals by Predator Animal Hunter

REMARKS: Beaver and badger both noted this year. Muskrat increased 50%. Slight decrease of skunks noted. White-footed mice (Peromyscus) density appears normal for this locality. No problems.

Reported by G. A. Devan, Refuge Manager

# INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

- (1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)
  - (2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
  - (3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.
  - (4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.
  - (5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.
- REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.



3-1750  
Form NR-1  
(Rev. March 1953)

W A T E R F O W L

REFUGE RAVALLI

MONTHS OF MAY <sup>THIRD</sup> TO AUGUST, 1967

	4/30	5/7	5/14	5/21	5/28 (2)	6/4	6/11	6/18	6/25	7/2
	Weeks of reporting period									
(1) Species	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	20	20	12	22	30	30	30	90	50	40
Cackling										
Brant										
White-fronted										
Snow										
<del>Blue</del> Ross'	130	150	150							
<del>Other</del> TOTAL	150	170	162	22	30	30	30	90	90	40
Ducks:										
Mallard	1,900	1,800	1,700	1,000	1,000	1,000	1,000	800	800	600
Black										
Gadwall	200	200	200	200	250	250	250	150	150	150
Baldpate	300	300	300	200	200	200	200	100	100	100
Pintail	200	200	300	100	100	100	100	50	50	25
Green-winged teal	200	200	200	100	200	200	200	200	275	275
Blue-winged teal	100	100	200	200	300	300	300	200	200	200
Cinnamon teal	10	60	100	200	300	300	300	200	150	150
Shoveler	200	300	200	200	200					
Wood	100	150	200	200	300	300	300	300	300	300
Redhead	30	30	50	50	50	50	50	10	10	10
Ring-necked	200	200	200	100	100	100	100	50	25	25
Canvasback	50	50	100	100	100	100	100	50	30	30
Scaup	100	100	200	300	100	100	100	50	40	40
Goldeneye	50	50	100	100	100	50	50			
Bufflehead	20	20	50	20	20	20	20			
Ruddy				10	15	20	20	4	3	
<del>Other</del> TOTAL	3,660	3,760	4,100	3,080	3,335	3,690	3,690	2,164	2,133	1,905
Coot:	1,200	1,200	1,400	1,600	1,200	1,000	1,000	500	500	500

3 -1750a

Cont. NR-1

(Rev. March 1953)

WATERFOWL  
(Continuation Sheet)REFUGE RAVALLIMONTHS OF MAY THRU 10 AUGUST, 19 67

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen: total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	10	10	15			10	4	4	2,499	3	24
Cackling											
Brant											
White-fronted											
Snow											
Blue									3,010		
Other TOTAL	10	10	15			10	4	4	5,509	3	24
Ducks:											
Mallard	500	500	500	500	300	100	200	300	101,500	45	320
Black											
Gadwall	150	150	150	100	100	50	100	100	20,300	10	60
Baldpate	100	100	100	200	300	100	100	100	21,700	10	60
Pintail	25								8,750		
Green-winged teal	275	275	275	300	200	100	100	100	25,725	30	200
Blue-winged teal	200	200	200	200	300	200	200	200	26,600	15	110
Cinnamon teal	150	150	150	200	100	50	50	50	18,650		
Shoveler									7,700		
Wood	300	300	300	200	100	50	50	50	26,600	30	200
Redhead	10	10	10	10	10	10	10	10	2,940	1	6
Ring-necked	25	25	25	100	50	25	25	25	9,800	2	14
Canvasback	30	30	30	20		10	10	10	3,050	3	20
Scaup	30	10	10	50	10	20	20	20	8,100		
Goldeneye									3,500		
Bufflehead									1,190		
Ruddy	10	10	10	20	50	50	10	10	1,672		
Other TOTAL	1,805	1,760	1,760	1,900	1,320	765	875	975	201,739	146	990
Coot:	500	500	500	800	400	400	400	400	98,000	35	200
				(over)							

	(5)	(6)	(7)	SUMMARY
	Total Days Use	Peak Number	Total Production	
Swans	—	—	—	Principal feeding areas <u>Sloughs, marsh, wetholes,</u>
Geese	5,509	170	24	<u>Ponds 1, 2, 3, 4 and 6.</u>
Ducks	291,739	4,100	990	Principal nesting areas <u>Same as feeding area.</u>
Coots	98,000	1,600	200	
				Reported by <u>G. A. Devan</u>

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).



3-1751

Form NR-1A  
(Nov. 1945)MIGRATORY BIRDS  
(other than waterfowl)Refuge RavalliMonths of May June August 1956

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Hooded Merganser	20	from last per.	100	June	1	8/31		8	70	100
Common Merganser	50	from last per.	50	May				2	16	50
Red breasted Merganser	2	5/15	7	5/21	7	5/21				
Great blue heron	12	from last per.	20	Aug.	12-still present,	transient	8		40	20 transient
Pied grebe	5	5/13	50	5/29	15 still present		2		12	50
Horned grebe	1	5/29	7	6/10	7	6/10				10
II. Shorebirds, Gulls and Terns:										
Killdeer	60	from last per.	200	July	Still present		40		120	200
Wilson's snipe	75	from last per.	250	June	Still present		50		150	250
Lesser yellowlegs	20	from last per.	50	May	50	May				50
Greater yellowlegs	15	5/15	20	May	20	6/2				20
Avocet	10	from last per.	10	May	10	May				10
Ring-billed gull	6	5/5	10	transient	all period					10
California gull	6	5/5	10	transient	all period					10
Wilson's phalarope	6	from last per.	40	May	1	Aug.	4		20	30
Northern phalarope	2	5/15	8	5/20	8	5/20				10

(over)

(1)	(2)		(3)	(4)		(5)		(6)
III. <u>Doves and Pigeons:</u>								
Mourning dove	50	from last per.	300	July	still present	20	160,	300
White-winged dove								
IV. <u>Predaceous Birds:</u>								
Golden eagle	2	5/29	2	5/29	2	5/29		2 transient
Duck hawk								
Horned owl	10	last period	20	5/15	8 still present	3	12	20
Magpie	100	last period		July	still present	10	50	150
Raven	2	5/5	15	5/15	15	5/15		15 transient
Crow	20	last period	50	June	20 still present	5	25	150
Red tailed hawk	4	last period	10	July	4 still present	2	8	12
Swainson's hawk	1	5/15	2	5/29	2	5/29		2
Sparrow hawk	20	last period	40	Aug.	still present	10	40	150
Marsh hawk	6	last period	6	May	2	8/15		10 transient
Rough-legged hawk	1	last period	2	5/29	2	5/29		2
Osprey	2	last period	4	7/10	still present, transient			4
Reported by...G...A...Devan.....								

#### INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)  
 II. Shorebirds, Gulls and Terns (Charadriiformes)  
 III. Doves and Pigeons (Columbiformes)  
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.



3-1750b  
Form NR-1B  
(Rev. Nov. 1957)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE  
WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Ravalli

For 12-month period ending August 31, 1967

Reported by G. A. Devan

Title Refuge Manager

(1)	(2)		(3)	(4)	(5)	
Area or Unit	Habitat			Breeding		
Designation	Type	Acreage	Use-days	Population	Production	
One Unit, all of currently acquired refuge.	Crops	300	Ducks	1,158,710	300	990
	Upland	1,300	Geese	14,833	6	24
	Marsh	300	Swans	1,470	—	—
	Water	380	Coots	180,250	40	200
	Total	2,280	Total	1,355,263	346	1,214
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
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	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
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	Crops</					



## INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

- (1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.
- (2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.
- (3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.
- (4) **Breeding**  
**Population:** An estimate of the total breeding population of each category of birds for each area or unit.
- (5) **Production:** Estimated total number of young raised to flight age.

3-1752  
Form NR-2  
(April 1946)

UPLAND GAME BIRDS

Refuge Ravalli

Months of May Thru August, 19 67

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specificioally requested. List introductions here.
Ring necked pheasants	Brush, grass, agriculture. 2000 acres	40	4	20	1/1				50	Some drift on refuge periphery noted. State Fish & Game released 30 hatchery surplus hens on the refuge in July.



INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.\*

- |                     |  |
|---------------------|--|
| (1) SPECIES:        | Use correct common name.   |
| (2) DENSITY:        | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.  |
| (4) SEX RATIO:      | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.  |
| (5) REMOVALS:       | Indicate total number in each category removed during the report period.   |
| (6) TOTAL:          | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.   |
| (7) REMARKS:        | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.  |

\* Only columns applicable to the period covered should be used.

3-1750  
Form NR-1  
(Rev. March 1953)

W A T E R F O W L

REFUGE RAVALLI

MONTHS OF SEPTEMBER ~~NO~~ DECEMBER, 19 67

(1) Species	(2) Weeks of reporting period									
	9/3	9/10	9/17	9/24	10/1	10/8	10/15	10/22	10/29	11/5
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling									3	1
Trumpeter										
Geese:										
Canada	12	12	17	4	3					3
<del>Canada</del> Lesser										1
Brant										
White-fronted										
Snow										
Blue										
<del>Other</del> TOTAL	12	12	17	4	3					4
Ducks:										
Mallard	400	400	400	300	400	1,500	2,000	2,200	2,400	2,300
Black										
Gadwall	100	100	100	100	200	100	50	100	100	50
Baldpate	200	200	200	300	300	300	300	300	300	400
Pintail	100	100	100	100	100	300	200	100	50	100
Green-winged teal	50	50	50	100	100	200	300	200	100	200
Blue-winged teal	400	400	300	300	200	200				
Cinnamon teal										
Shoveler	200	200	400	400	100	100	100	50	20	
Wood	100	100	200	200	50	25	25			
Redhead	50	50	100	50	50	25	25	25	20	
Ring-necked	10	10	50	50	50	50	50	50	10	
Canvasback	25	25	25	50	50	25	25	20	10	
Scaup	50	50	50	50	50	100	100	200	250	300
Goldeneye										50
Bufflehead				25	25	25	25	25	20	20
Ruddy	50	50	100	200	100	50	50	50	50	10
<del>Other</del> TOTAL	1,735	1,735	2,075	2,225	1,775	3,000	3,250	3,320	3,330	3,430
Coot:	500	500	500	500	1,000	1,200	1,200	1,200	1,000	800

3 -1750a

Cont. NR-1

(Rev. March 1953)

# WATERFOWL (Continuation Sheet)

REFUGE RAVALLI
 MONTHS OF SEPTEMBER THRU ~~10~~ DECEMBER, 19 67

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use		(4) Production Broods: Estimated seen : total	
	11/12 11	11/19 12	11/26 13	12/3 14	12/10 15	12/17 16	12/24 17	18				
Swans:												
Whistling		4	2	4	3				119			
Trumpeter												
Geese:												
Canada	6	10	10	34	14		37		1,134			
<del>Sackling</del> Lesser			4						35			
Brant												
White-fronted												
Snow												
Blue												
<del>Other</del> Total	6	10	14	34	14		37		1,169			
Ducks:												
Mallard	2,000	2,500	1,500	2,200	1,400	3,000	3,500		198,800			
Black												
Gadwall	50	100			50				8,400			
Baldpate	300	300	40	50	75	150	200		27,405			
Pintail	200	200			20	50	100		12,740			
Green-winged teal	200	100	50	150	75	20	50		13,965			
Blue-winged teal									12,600			
Cinnamon teal												
Shoveler	40	100		20	50				12,460			
Wood									4,900			
Redhead	10	20							2,975			
Ring-necked									2,310			
Canvasback	10	20							1,995			
Scaup, Lesser	100	150		20	20		20		10,570			
Goldeneye	40	50		10	20	20	20		1,470			
Bufflehead	20	40	20	10		20	20		2,065			
Ruddy	20	20							5,250			
<del>Other</del> TOTAL	2,990	3,600	1,610	2,460	1,710	3,260	3,910		317,905			
Coot:	600	700	200	200	100	100	100		72,800			
				(over)								



	(5)	(6)	(7)	
	Total Days Use	Peak Number	Total Production	SUMMARY
Swans	119	4		Principal feeding areas
Geese	1,169	37		Entire refuge, sloughs, marshes
Ducks	317,905	3,500		and grain fields.
Coots	72,800	1,200		Principal nesting areas
				Reported by G. A. Devan.

# CLASS C INVENTORY

## INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

(1)	(2)	(3)	(4)	(5)	(6)
<b>CLASS C INVENTORY</b>					
<b>III. Doves and Pigeons:</b>					
Mourning dove	100 fr. last per.	200	9/25	3	11/11
White-winged dove					
<b>CLASS D INVENTORY</b>					
<b>IV. Predaceous Birds:</b>					
Bald eagle	1	12/27	1	Dec.	1
Duck hawk					
Horned owl	8 fr. last per.	15	Oct.	10	resident
Magpie	100 " " "	300	Dec.	150	" "
Raven	1	10/11	7	10/31	2
Crow	14	9/31	14	9/31	11
Red tailed hawk	4 fr. last per.	4	9/31	1	12/10
Swainson's hawk	1	10/18	1	10/18	1
Sparrow hawk	20 fr. last per.	20	Sept.	2	12/28
Marsh hawk	1	9/12	7	11/27	6 still present
Rough legged hawk	1	10/26	4	12/27	3 " "
Osprey	2	9/2	3	10/18	1
Goshawk	1	12/27	1	12/27	1
Reported by G. A. Devan					

### INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes) II. Shorebirds, Gulls and Terns (Charadriiformes) III. Doves and Pigeons (Columbiformes) IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.





3-1750c  
Form NR-1C  
(Sept. 1960)

WATERFOWL HUNTER KILL SURVEY

Pacific Flyway. Season Oct. 7 - Jan. 4

Refuge Ravalli

Year 1967

INSTRUCTIONS

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
Oct. 7-13	15	180	G.W. teal 17, Mallard 9, Pintail 2, B.W. teal 2, Can. 2, Scaup 2, C. Merganser 2, Coot 2	38	7	45	150	450
14-20	28	34	Mallard 17, Ringneck 4, L. scaup 2, Shoveler 2, Can. 2, Coot 2, Ruddy 1, C. Merganser 1	31	7	38	280	380
21-27	13	28	Mallard 5, G.W. teal 5, Widgeon 5, Pintail 1, Redhead 1, Ruddy 1, C. merganser 1	19	4	23	130	230
28 - Nov. 3	15	45	Mallard 9, Ringneck 1, Bufflehead 1, Coot 1, Ross' goose 1, Widgeon 1, Pintail 1	15	5	20	150	200
Nov. 4-10	34	64	Mallard 19, redhead 2, gadwall 2, G.W. teal 2, Coot 1	26	5	31	340	310
11-17	15	26	Mallard 2, Redhead 2, Bufflehead 1, G.W. teal 1, Coot 1	7	2	9	150	90
18-24	11	33	Mallard 9, Widgeon 3	12	3	15	110	150
25- Dec. 1	12	37	Mallard 29, Coot 3, C. geese 2, G.W. teal 1, Widgeon 1	36	7	43	120	430
Dec. 2-8	26	95	Mallard 36, C. geese 4, Goldeneye 2, Ruddy 1, Ringneck 1, Coot 1	45	8	53	260	530
9-15	14	56	Mallard 10, Widgeon 4, Gadwall 3, Scaup 3	20	2	22	140	220
16-22	11	55	Mallard 14, Widgeon 2	16	5	21	110	210
23-29	8	42	Mallard 14, C. geese 2, Scapp 2, Coot 2	20	3	23	80	200
30 - Jan. 4	11	55	Mallard 18	18	7	25	110	250

(over)



Pacific Flyway, Season Oct. 7 - Jan. 4

Refuge Name \_\_\_\_\_ Year 1967

# INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spent hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 percent.  $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}$ .

3-1752  
Form NR-2  
(April 1946)

# UPLAND GAME BIRDS

Refuge Ravalli Months of September ~~to~~ December, 19 67 Thru

## CLASS D INVENTORY

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring necked Pheasants	Brush, grass, agricultural, 2,000 acres	10			1/1	40			210	State planted 100 M, 60 F on Public Hunting Area, 9/15

\* Only columns applicable to the period covered should be used.



# INSTRUCTIONS

## Form NR-2 - UPLAND GAME BIRDS.\*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

\* Only columns applicable to the period covered should be used.



3-1753  
Form NR-3  
(June 1945)

BIG GAME

Refuge Ravalli

Calendar Year 1967

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions	(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss		At period of Greatest use	As of Dec. 31	
Common Name	Cover types, total Acreage of Habitat	Number								Number	Source		
White-tail Deer	Brush, timber, grass 1,400 acres	4					1				10	10	1M/5F
Black bear											1		

Remarks: Bear was obviously fall transient.

Reported by G. A. Devan, Refuge Manager

# INSTRUCTIONS

## Form NR-3 - BIG GAME

- (1) **SPECIES:** Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) **DENSITY:** Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) **YOUNG PRODUCED:** Estimated total number of young produced on refuge.
- (4) **REMOVALS:** Indicate total number in each category removed during the year.
- (5) **LOSSES:** On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) **INTRODUCTIONS:** Indicate the number and refuge or agency from which stock was secured.
- (7) **TOTAL REFUGE POPULATION:** Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) **SEX RATIO:** Indicate the percentage of males and females of each species as determined from field observations or through removals.

DISEASE

Refuge Ravalli Year 1967

Botulism

Lead Poisoning or other Disease

Period of outbreak \_\_\_\_\_

Period of heaviest losses \_\_\_\_\_

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) \_\_\_\_\_

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.) \_\_\_\_\_

Condition of vegetation and invertebrate life \_\_\_\_\_

Remarks NOTHING TO REPORT

Kind of disease \_\_\_\_\_

Species affected \_\_\_\_\_

Number Affected Species	Actual Count	Estimated
_____	_____	_____
_____	_____	_____
_____	_____	_____

Number Recovered \_\_\_\_\_

Number lost \_\_\_\_\_

Source of infection \_\_\_\_\_

Water conditions \_\_\_\_\_

Food conditions \_\_\_\_\_

Remarks NOTHING TO REPORT



## PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge RavalliCalendar Year 1967

## 1. Visits

a. Hunting 1500 b. Fishing 2200 c. Miscellaneous 2640 d. TOTAL VISITS 6340

## 1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl	1187	680	Refuge
Upland Game	300	"	"
Big Game			
Other— <del>Archery,</del> deer	13	"	"

Number of permanent blinds 0Man-days of bow hunting included above 5Estimated man-days of hunting on lands adjacent to  
refuge 2000

## 1b. Fishing (area open to fishing on refuge lands)

TYPE OF AREA	ACRES	MILES
Ponds or Lakes		
Streams and Shores	26	3 mi.

## 1c. Miscellaneous Visits

Recreation 2400 Official 140Economic Use 100 Industrial —

## 2. Refuge Participation (groups) (Refuge personnel conducting.)

TYPE OF ORGANIZATION	On Refuge		Off Refuge	
	NO. OF GROUPS	NUMBER IN GROUPS Ave.	NO. OF GROUPS	NUMBER IN GROUPS Ave.
Sportsmen Clubs			4	30
Bird and Garden Clubs	10	15	7	14
Schools	8	23	9	28
Service Clubs	1	62	2	32
Youth Groups	1	14		
Professional-Scientific	2	22		
Religious Groups				
State or Federal Govt.	2	32	4	47
Other				

## 3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	7	Radio Presentations	
Newspapers (P.R.'s sent to)	3	Exhibits	
TV Presentations		Est. Exhibit Viewers	



## INSTRUCTIONS

Item 1: Total of a, b, and c, equal d.

"Visit" - definition. Any person who is on refuge lands or waters during a day or part thereof for the purpose of: hunting, fishing, bird-watching, recreation, business or economic use, official visit, or similar interest. INCLUDE - those who stop within the refuge while traveling on a public highway because of an interest in the area. EXCLUDE - persons engaged in oil or other industry not directly related to the refuge, persons using refuge as most direct route or principal avenue of traffic, and those boating on navigable rivers or the Intercoastal Canal, unless they stop to observe wildlife on the refuge.

Computing visits. Where actual counts are impractical, "sampling" is used with midweek and week-end samples varied by season or weather. A conversion factor of 3.5 (of passengers per car) is used when accurate figures are not available. Each refuge will develop a conversion factor for boats based on range of usage. Count a camper once for each 24-hour period or fraction thereof.

Item 1a: Acres - of refuge open for each type of hunting.

Managed hunts require check in and out of hunters, issuance of permits, or assignment of blinds.

Other - INCLUDE crow, fox, and similar hunting.

Lands adjacent to refuge. Normally considered within 1 mile or less of boundary, unless established sampling procedures cover a wider area. For big game hunting, the distance may be greater.

Item 1b: Acres of streams open to fishing, if practical; otherwise just miles open. Information on "shores" is primarily for coastal fishing.

Item 1c: Recreation. INCLUDE photography, observing wildlife, picnicking, swimming, boating, camping, visitor center use, tours, etc. TOTAL Recreation, Official, and Economic Use visits under Item 1.

Industrial. INCLUDE persons engaged in industry, i.e., oil industry or factories. EXCLUDE these from Item 1.

Item 2: INCLUDE the "On Refuge" groups in Items 1c and 1. In "Off Refuge" column include only those group meetings in which refuge employees actually participate. EXCLUDE these from Items 1c and 1.

Item 3: Exhibits - INCLUDE displays, fairs, parades, and exhibits OFF the refuge; EXCLUDE those ON.

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

(1)

Refuge Ravalli

Year 19 67

Species	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	** Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
White Dutch clover	600 lb.	R	10/66	S	*	200 lb.	Tracts 11,12, 13,19,20,21	4lb./A.	100 Acres		5/67	75%	Drouth
<u>Seedlings</u>													
Honeysuckle	100	Purchased	5/67	State Forest Nursery	36.00	All planted 5/67	as above	3' spacing	1/2 mile scattered cover and food patches		5/67	40-45%	Drouth
Sandcherry	100												
Buffaloberry	100												
Sumac	100												
Caragana	100												
Siberian elm	100												
Russian olive	200												

- (1) Report agronomic farm crops on Form NR-8  
(2) C = Collections and R = Receipts  
(3) Use "S" to denote surplus

Total acreage planted:

Marsh and aquatic \_\_\_\_\_  
Hedgerows, cover patches \_\_\_\_\_  
Food strips, food patches 100 acres  
Forest plantings \_\_\_\_\_

Remarks: \*Transferred from Kootenai N.W.R.

\*\*Map included in this report for site indications.



3-1758  
Form NR-8  
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS -- HAYING -- GRAZING

Refuge Ravalli

County Ravalli

State Montana

Cultivated Crops Grown		Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
				Harvested $\frac{1}{4}$		Unharvested $\frac{1}{3}$				
		Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Barley	Tract 11	36	1110 bu.	12	370 bu.				Browse, winter wheat	30
	Tract 20	63	3405 bu.	21	1135 bu.					
	Tract 19	33.5	1005 bu.			16.5	495 bu.			
	Tract 21	66	2310 bu.			33	1155 bu.			
	Totals	198.5	7830 bu.	33	1505 bu.	49.5	1650 bu.	281		
									Fallow Ag. Land	

No. of Permittees: Agricultural Operations 3 Haying Operations 0 Grazing Operations 6

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
*** NONE ---				1. Cattle	224	1074	3222	800
				2. Other— Horse-Mile	29	140	222	220
				1. Total Refuge Acreage Under Cultivation				311
Hay - Wild				2. Acreage Cultivated as Service Operation				

DIRECTIONS FOR PREPARING FORM NR-8  
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.



## REFUGE GRAIN REPORT

Refuge RavalliMonths of September through December, 1957

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF *				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Oats	80			80							
Barley	715	1505	2200	1755				465		465	

(8) Indicate shipping or collection points \*Transferred to National Bison Range, 1095 bu., and Nine Pipes N.W.R., 740 bu.(9) Grain is stored at Refuge Work Center

(10) Remarks

\*See instructions on back.

## REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

**Report all grain in bushels.** For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

Refuge Ravalli Year 1967

Total acreage cut over.....

Total income.....

No. of units removed B. F. ....

Method of slash disposal.....

Cords.....

Ties.....



# ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

Reporting Year

1967

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
June 17, 19, & 29	Annual mustard, Canada thistle	Tracts 11,19,20 & 21	180	240	360 lbs.	2 lbs/acre	water 2 lbs/ 100 gal.	Spray

10. Summary of results (continue on reverse side, if necessary)

Good results on annual mustard. Canada thistle only retarded.